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BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY

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**E. I. DU PONT DE NEMOURS & COMPANY, (INC.)**

PHOTO PRODUCTS DEPARTMENT • WILMINGTON 98, DELAWARE

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

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## THE REAL PLEASURE

# IN *Photography*

THIS IS NOT a text-book, nor a scientific treatise on photography. You can obtain such books at any good photographic store or from your local library. Its purpose is to remove the mysteries of picture making, to explain the essential steps and some of the theory behind each in the simplest possible terms . . . to acquaint you with "THE REAL PLEASURE IN PHOTOGRAPHY."

This booklet is written to show you how easy it is to compose an artistic, well-balanced and pleasing picture . . . to show you how easy and simple it is to develop a film . . . how much fun it is, and how satisfying, to see the picture you have made come to life on the photographic paper in your developer.

Picture taking, if only to record the scenes you have enjoyed and the people you have met, is always a pleasure. But the real pleasure comes when you begin to understand some of the elements that make a good picture, and understand the materials with which you work. Such understanding comes only when you can follow through on every step of picture making . . . from the time you compose the scene in your camera view-finder until you trim and mount the final print.

Perhaps you have hesitated to do these things because you feel that you have no artistic sense or because the steps in developing a film and making a print may seem too complex, or the building of a darkroom beyond your capabilities or pocketbook. Several suggested darkroom designs that will meet your requirements are included.

## WHAT YOU NEED FOR

# *Picture Making*

There are 5 important things that make photography possible. They are *you*, the *camera*, the *film*, the *paper* and the *chemicals*. All of the other things with which the photographer surrounds himself are accessories to make photography easier, simpler and more accurate.

- **YOU** must *see* the picture, and in it see something moving or beautiful, or otherwise worth recording. You select the spot and the angle from which to take the picture. Your skill and judgment regulate the amount of light that reaches the film and creates a good or a bad negative. You develop the film. You control the composition and the tonal values in printing the picture.
- **THE CAMERA** may be any type or model using roll film, sheet film or film packs. The choice depends entirely upon the amount you wish to spend. No matter what your selection may be, results depend largely on the skill of the photographer.
- **THE FILM** is the medium with which you, the artist, work with lights and shadows as your colors. Its light-sensitive emulsion is capable of recording permanently as a negative everything that has entered your camera lens.
- **THE PAPER** also sensitive to light, is capable of reproducing all of the tones of light and shadow contained in the original negative.
- **THE CHEMICALS** are the agents that act upon exposed film and paper to turn the fleeting images of light and shadow into a picture you can see and enjoy long afterwards.



## IT'S HOW

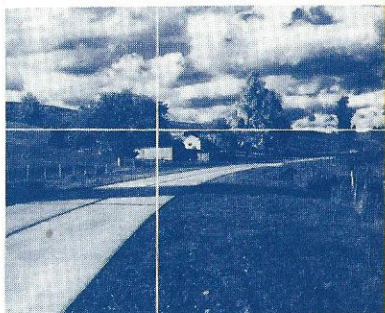
# *You Look at it...*

Broadly speaking there are two types of pictures: record pictures and those that interpret a character, a mood or a theme. Most snapshots fall into the first class and as a result have little interest to anyone except those who are familiar with the subject. Yet just a little better understanding of the rules of composition and of methods of interpretation would make it possible to create better pictures, even from snapshots.

Before taking any picture, consider what you want to interpret by the picture. If you are photographing children, you will want to capture something of their gay, happy, carefree expressions. If it is an elderly person, you will want to record the mellowness of age.

An outdoor scene without people can be more than a record photograph of so many rocks and trees or a broad expanse of water. Think of the emotion the scene conveys and try to interpret that. It may be a feeling of calm, the tenseness that comes just before a storm, or the mystery and romance of a fog-shrouded scene.

In other words, just don't take *pictures* but take *pictures that say something*.



The composition in this photograph shows how area may be divided into balanced parts. Note how the major elements in the photograph are centered around the intersection of the lines drawn two-fifths of the distance from side to side of the print and three-fifths of the distance from top to bottom. Secondary points of interest also fall along these lines to hold the interest and pull the eye to the principal point—the cluster of farm buildings.

While this will take care of the content of your pictures, there is another important factor . . . and that is composition.

Composition is the orderly arrangement or balance of the elements within the picture to make a pleasing pattern for the eye.

Keep your pictures simple, with one and not more than two principal points of interest. Whether you are taking a picture of one person, a delicate flower or a stately snow-covered tree, select a background that is not confused by a lot of lines and masses. Look carefully at your background before you take the picture. It's easier to eliminate disturbing elements when posing the subject than to remove them later in the darkroom.

Keep the principal object in your photograph away from the mathematical center of the picture. Place it slightly above or below the line running horizontally through the center of the picture, and slightly to one side or the other of the vertical center line. In scenic shots, be careful that your horizon line does not divide your picture into two exactly equal parts.

Balance heavy masses with light areas or lighter shadow areas.

Make every line in your picture lead the eye to the center of interest. Often you can achieve this by subtly "framing" the scene with overhanging branches of a tree or the arch of a doorway.

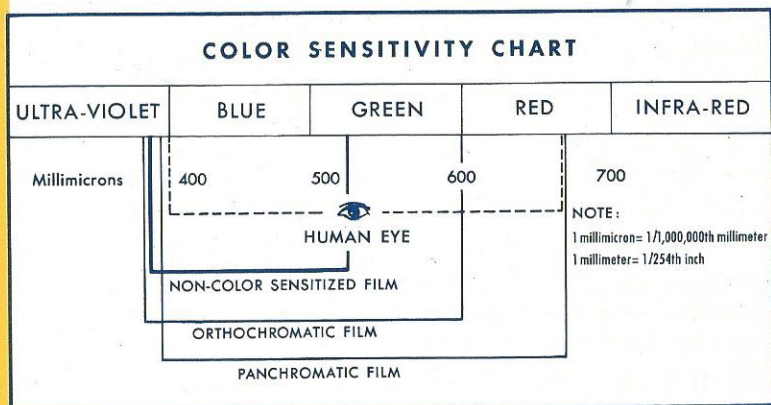
In a close-up of a person or a photograph of a moving object include more picture area on the side toward which the person is looking or toward which the object is moving.

Avoid perfectly blank sky areas. If a third or more of your picture is sky, use a light yellow or red filter on your camera lens to subdue the sky and emphasize clouds.

These are just a few of the things to remember about composition. It's best to apply them right from the beginning, before you even trip the shutter of your camera. If you do forget some of them, the resulting faults often can be corrected when you make your prints.



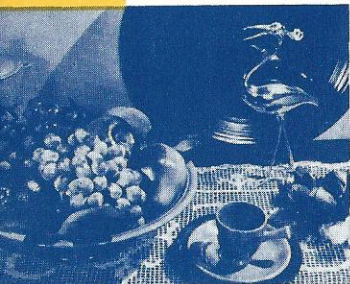
# THE *Film* . . .



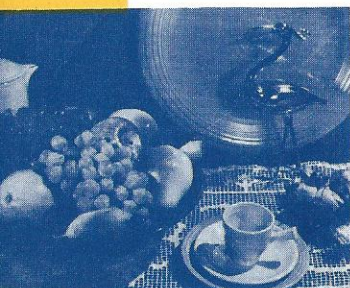
Most film that is used today, whether it is roll film, film pack or sheet film, is a suspension of silver salts in gelatin which is coated on a transparent safety base.

Photographic films differ in their sensitivity to light of various colors. Orthochromatic films are highly sensitive to blue and green light and are relatively unaffected by red. Hence, they can be developed under a red safelight in the darkroom. Panchromatic films are sensitive to all colors and, therefore, must be developed in total darkness. Panchromatic film should be used where the object being photographed also contains reds which you wish to translate into black and white in their true tonal relations. Where the accurate rendition of red is not important, orthochromatic film is recommended. Ortho films record red as black in the print.

Photographic films differ in speed so that the proper exposure time is determined



Orthochromatic Film —  
Reds Are Dark



Panchromatic Film —  
Normal Color Balance

on the basis of both the film speed and lighting conditions.

Instructions for the proper exposure of the film usually accompany the camera and film. Exposure meters which measure the amount of light reflected by the subject are valuable aids in obtaining properly exposed negatives and your photographic dealer will be glad to explain them.

The film speeds and recommended exposure setting in the direction sheets packed with the film should be followed carefully. The speed ratings are given in numerical values known as Weston, General Electric, or Scheiner ratings or A.S.A. (American Standards Association) indices. The higher the number or index, the higher the speed of the film. Naturally, shorter exposures can be made with the higher speed films in order to "stop" action.

While Du Pont does not supply roll film, it has a wide variety of "Defender" films for the amateur whose camera is adapted to the use of cut sheet film. These films include:

**"Defender Arrow" Pan**, a high speed, highly red-sensitive panchromatic film with excellent color correction by daylight and daylight fluorescent lighting. Its greatest speed advantage is by incandescent light. A.S.A. speed index: daylight 125; tungsten 80.

**"Defender X-F" Pan**, a general purpose high speed panchromatic film sensitive to all colors without over-correction to red. A.S.A. index: daylight 64; tungsten 40.

**"Defender" Fine Grain Pan**, especially recommended for all work requiring a high degree of enlargement. It is approximately one-half the speed of "Defender X-F" Pan with similar color sensitivity. A.S.A. index: daylight 32; tungsten 20.

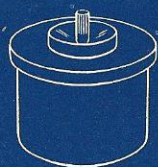
**"Defender" Ortho 7**, high speed orthochromatic film with high green sensitivity. A.S.A. index: daylight 125; tungsten 64.

**"Defender X-F" Ortho**, highly orthochromatic film nearly as fast as "X-F" Pan to tungsten or incandescent light. Suitable for all types of work, it can be processed under a dark red safelight. A.S.A. index: daylight 64; tungsten 20.

Ask your dealer about other "Defender" films, which are manufactured especially for portraiture and commercial work.



## DEVELOPING THE *Film*



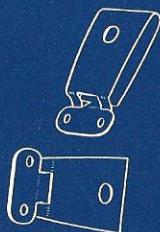
ROLLFILM  
DAYLIGHT TANK



GRADUATE  
THERMOMETER



SAFELIGHT



FILM CLIPS

Before developing your film, select a spot in your home where all outside light can be excluded. Panchromatic films must be developed in total darkness, while orthochromatic films, being insensitive to red, can be developed under a red safelight.

The minimum equipment needed for developing film includes a safelight; trays for processing solutions; a source of water; a tray or tank for washing the film; clips or clothespins for hanging the film to dry.

This is the equipment you will need for tray development. If your camera uses roll film or 35 mm. film you will find it much easier to develop your film by the daylight tank method. In this latter method you only have to load your films into the reel of the tank in darkness. After the light-tight cover of the tank has been replaced all the rest of the operations may be performed in the light. No trays will be necessary for fixing or washing since all of these operations are carried out without removing the film from the tank.

Prepared developers and fixers are recommended for the beginner because only water need be added to them, thus eliminating the necessity of weighing and mixing the individual chemicals. Complete directions are printed on each package.

Recommended film developers are "Defender" 6-D Borax and 53-D All Purpose



INSERTING ROLL  
FILM IN REEL



EXPLODED VIEW  
OF ROLL FILM  
DAYLIGHT TANK



POURING SOLUTION  
INTO TANK

Developers. The latter is also recommended for paper development.

While plain water can be used as a rinse between developing and fixing, "Defender" 2-S Chrome Alum Hardener and Stop Bath is recommended. It stops development immediately and hardens as well as toughens the emulsion.

"Defender" 1-F Acetic Acid Fixer is recommended for both films and papers.

**TANK DEVELOPMENT OF FILM** • The first step in tank development of roll film is the insertion of the film in the tank reel, as illustrated.

Remember, if it is panchromatic film, all operations must be conducted in total darkness. A red safelight may be used with orthochromatic film.

After breaking the seal on the exposed film, start unwinding the paper backing until you come to the beginning of the film. There you will find a short paper leader which should be torn off. Before unwinding any more of the film, take the roll in your right hand and the reel in your left with the opening for the insertion of the film at the top. Insert the end of the film in the grooves of the reel, and holding the reel stationary, gently feed the film into the reel. The paper backing will roll itself up on the outside of the reel. When you come to the end of the film, tear off the backing paper. Discard the paper and feed the rest of the film into the reel and under the locks generally provided. Then place the reel in the tank and replace the tank lid. After the lid is placed securely on the tank, lights may be turned on and the



developing done without fear of fogging the film because the tank is light-tight.

A quantity of developing solution at 68° F (20° C) is then poured into the tank, so that the film is covered completely. Always use a thermometer and observe the recommended temperatures before processing either film or paper. Estimate developing time from the time-temperature table furnished with each package of developer and agitate the tank frequently.

At the end of the developing time, without opening the tank, pour off the developer and pour in water or stop bath. After two to three minutes pour this off and replace with the fixing solution. The film should remain in the fixing solution for approximately fifteen minutes, with frequent agitation. After fixing, the cover of the tank may be removed and the film washed in gently running water for a half hour. When thoroughly washed, the film may be hung up by film clips, in some convenient dust-free spot for drying. Excess water may be removed with a pair of Du Pont cellulose sponges, as illustrated.

35 mm. film is handled exactly the same as standard roll film except that it has no paper backing. In no case should the fingers ever come in contact with the surface of the film; always handle the film by the edges.

**TRAY DEVELOPMENT OF ROLL FILM** • These trays should be large enough to permit easy manipulation of the film. Separate the film from the backing paper and fasten clips to each end. Holding one clip in each hand, see-saw the film back and forth through the developer for the proper length of time, then transfer the film to the stop bath and fixer.



**"SEE-SAW" ROLL  
FILM THROUGH  
SOLUTION**



**REMOVING EXCESS  
WATER AFTER  
WASHING**

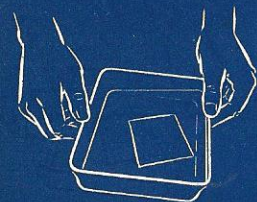


**LOADING OR  
UNLOADING SHEET  
FILM HOLDER**

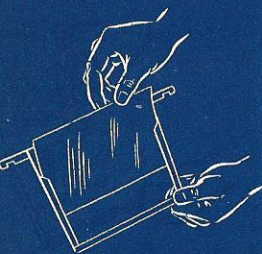




USING TIMER  
FOR ACCURATE  
DEVELOPMENT



ROCK TRAY GENTLY  
FOR EVEN  
DEVELOPMENT



INSERTING FILM  
IN FILM HANGER  
FOR DEVELOPMENT

It should be remembered that tray developers usually are more concentrated and require less developing time than tank developers. Always check and follow the manufacturer's recommendations on the developer package as to dilution and developing time.

After five minutes of fixation, lights may be turned on and fixing and washing completed.

**DEVELOPMENT OF SHEET FILM** • Remove the sheet of film from the plate holder or film pack. This type of film is developed singly in trays or in film hangers in a tank.

In tray development, simply place the sheet of film in the tray of developer, emulsion side up, and rock the tray gently back and forth to assure even development.

At the end of the prescribed developing time, transfer the film to the rinse or stop bath and then to the fixer. Sheet film should be handled only at the corner by the thumb and forefinger to avoid fingerprints or stains on the image area.

If several films are to be handled, they can be placed in film holders which are grooved metal frames with a long crossbar for suspending in open tanks. Agitate the film hangers frequently during development. Rinse, fix, and wash the film in the usual way before they are removed from hangers.

In the daylight type tanks, separate grooves are provided in the inner film holder for each film. After the film is in place, insert the holder in the tank, put the lid on, and follow the same procedure as in the tank development of roll film. The negatives may be dried by suspending them from the edge of a shelf by small clips, or spring clothespins on a line.



# THE *Paper* . . .

The basic consideration in selecting a photographic paper is to find one that is in harmony with and complementary to the subject.

All Du Pont photographic papers with the exception of "Vari-gam" fall into one of two major types: *chloride*, for contact prints, and *chlorobromide*, for enlargements. They are made in several grades to compensate for differences of negative contrast.

Exposure of photographic film to strong light causes a heavy deposit of silver on the negative and gives us a "highlight." If a thin deposit results from low reflection of normally strong light such as sunshine, we call it a "shadow." A "contrasty" or "hard" negative is one made up largely of strong highlights and deep shadows with few middle tones. A "soft" negative has a large proportion of middle tones with few, if any, strong highlights and deep shadows.

Most photographic papers are also available in a variety of surface textures, each giving a distinct effect. In each case, the surface should be determined by the subject of the photograph.

<i>Surface to Use</i>	<i>Where to Use It</i>
Glossy; semi-glossy	Where negative has fine detail Where maximum black is required in print Where print is to be reproduced in a newspaper or magazine
Matt; semi-matt	High key pictures Landscapes
Fine Grain Rough	Portraiture Character portraits Exhibition Prints
Silk	Water or snow scenes Portraits or still life

Choice of paper tint is also important. Du Pont photographic papers are available in white, cream white and buff.



**"DEFENDER APEX"** Photographic Contact Paper provides brilliant reproductions in contact printing (i.e. for prints the same size as the negative). It is widely used in photo-finishing. 10 surfaces—6 degrees of contrast.

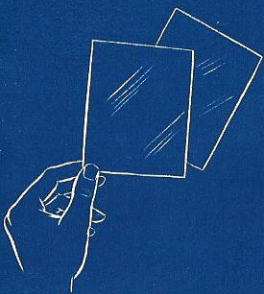
**"DEFENDER VELOUR BLACK"** Photographic Projection Paper is a favorite enlarging paper among amateur and professional photographers because of its high speed, its simplicity of manipulation and its fidelity to the negative. Highlights are crisp and clear, shadows a rich, deep, velvet black. 17 surfaces—4 degrees of contrast.

**"DEFENDER VARIGAM"** Variable Contrast Photographic Paper provides complete contrast control in one paper, eliminating the necessity of carrying several degrees of contrast in your darkroom. The contrast of any sheet of "Varigam" can be varied through ten full grades merely by changing filters on the enlarger. Card mounted gelatin filters, together with a holder to snap on your enlarger are available in sets of five or ten. "Varigam" is available in 5 surfaces.

**"DEFENDER VELTURA"** Warm Tone Projection Paper was especially created for portraiture and pictorial photographs to provide black and white prints with a rich, warm tone. Landscapes, in which the artist-photographer has attempted to capture a feeling of warmth and restfulness, are reproduced with a life-like beauty on this outstanding paper. 2 surfaces—normal contrast only.



# MAKING THE *Prints* . . .



CONTACT PRINT  
IS SAME SIZE  
AS NEGATIVE



Spring back  
Paper  
Film  
Frame



Light source



PRINTING BOX

Print making is one of the most interesting aspects of photography. It is a thrilling experience to see a picture you have taken come to life in the developer. A blank sheet of paper is suddenly peopled with those you know and love. A familiar scene is recreated or summer moments are relived during a winter evening of print making.

In many respects print making is even easier than developing your negatives. Here you can see what you are doing, you can watch what is happening at each stage of the process. Thus you acquire a better knowledge of negative processing also, for the two processes and the chemical changes that take place are almost identical.

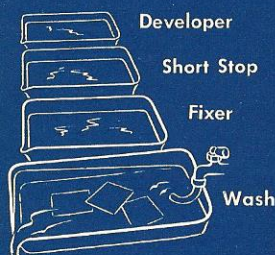
If you have never made a print before and want to embark on this fascinating hobby as economically as possible you probably will want to start by making contact prints.

**CONTACT PRINTING** • The equipment you need for contact printing is not elaborate, although as in all phases of photography the expenditure is up to you. Your dealer can help you in the selection of your equipment. (A check list that will be extremely helpful to you is enclosed in the back of this booklet. Consult your dealer after you complete the check list.)

These are your basic needs:

“Defender Apex” contact paper in sizes and grades to match your negatives

A printing frame or printer



TRAY ARRANGEMENT



EMULSION OF PAPER  
AND NEGATIVE MUST  
FACE EACH OTHER  
IN PRINTING FRAME



PLACE PRINTING  
FRAME MEASURED  
DISTANCE FROM LIGHT

## A "Defender" S-55X Safelight

Three photographic trays

A tube or two of "Defender" 53-D All Purpose Developer.

A package of "Defender" 1-F Acetic Acid Fixer

A graduate in which to mix your solutions.

Your first step should be to mix your chemicals. The developer should be poured into the first tray, clear water or stop bath into the second and the fixing solution into the third and last tray. You will also need a fourth tray for washing prints. The room should now be darkened; exclude all white light. Stray white light must not hit your paper prior to the time it is placed in the fixing solution. You can test your safelight by covering half a piece of unexposed paper and letting it stand for a few minutes, then developing it. If there is any stray light, or if your safelight is too bright, the uncovered part of the paper will develop gray or black.

You are now ready to make prints. Open the printing frame and place the negative in it with the emulsion or dull side up. (In all printing, contact or enlarging, the emulsion of the film should always face the emulsion of the paper.) Place the paper upon the negative. Replace the back of the printing frame and clamp in position. Make the exposure.

If you are using a printing frame alone place it a measured distance from an electric light bulb which you can turn on and off easily. By using a measured distance you can duplicate your exposure and more easily estimate the required exposure for succeed-



ing prints. Before turning on the light be sure that all unexposed paper is covered properly, otherwise it will be ruined.

A printing box allows more accurate determination of exposure and some of them permit control of light intensity to various parts of the negative thus permitting correction of negative errors.

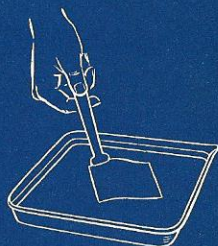
When the exposure is made, the light passes through the negative to reach the sensitized surface of the paper. The more transparent parts of the negative allow more light to pass through, while the denser portions pass less light.

After the exposure, remove the paper from the printing frame and place it in the developer. Since the highlights of your scene are represented by dark areas in your negative and the shadows by transparent areas, you will see that the print is the reverse of the negative image and thus a black and white reproduction of the original scene.

Usually a print should be fully developed in 45-90 seconds. If, after this time it is too light, it means that it has been underexposed. If it is too dark, it has been overexposed. Corrections can be made in succeeding exposures.

After development is complete, transfer the print to the rinse or stop bath. Agitate it for a few seconds, then transfer to the fixing solution. After your fingers have been in the fixing solution, rinse and wipe dry before touching a fresh sheet of paper or before putting them in the developer. Otherwise, the paper will be stained.

Fix prints from ten to fifteen minutes; wash in running water for one hour or for



**DEVELOP**  
45-90 SECONDS



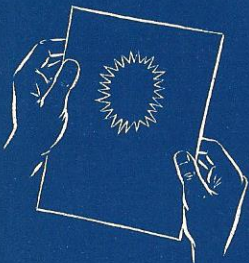
**RINSE 5 TO 10**  
**SECONDS**



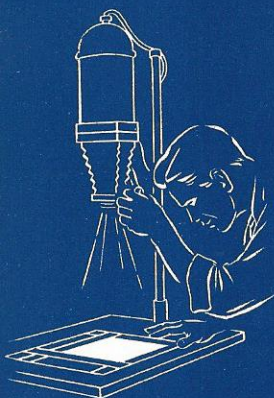
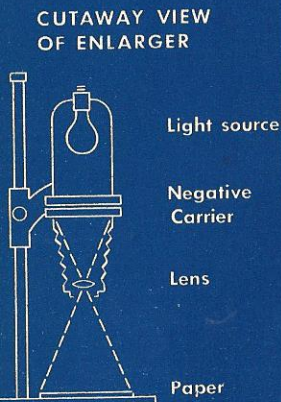
**FIX FOR 15 MIN.**



**WASH FOR 1 HOUR**



CARD-BOARD  
CUT OUT FOR  
"BURNING IN"



FOCUSING ENLARGER

five minutes in each of twelve successive changes of water.

**ENLARGING** • To the average photographer the making of big prints out of little negatives is a fascinating phase of the hobby. It affords a degree of control not possible in contact printing. You can select a portion of a negative for enlargement, improve composition, accent or subdue any part of the picture. You can make it as large as you wish within the limitations of your equipment and materials and the grain of the negative.

The first piece of essential equipment is, of course, your enlarger. The type can be decided by you in a discussion with your photo supply dealer.

Trays should be larger than those used for contact printing since they will have to be of adequate size to handle the larger prints. A "Defender" S-55-X Safelight is recommended. Orange brown in color, it is not only safe for use with most chloride and chlorobromide papers but it also permits better judging of the quality of prints.

Solutions are prepared and poured in the trays in the same manner as they were for contact printing.

The first step in printing is the insertion of the negative in the negative carrier of your enlarger. Be sure that the emulsion side is face down. With the negative in the enlarger turn on the enlarger light and proceed to focus on a sheet of white paper. Move the enlarger up or down to enlarge or diminish the size of the image. When you have arrived at the print size desired adjust the focus of the lens until the picture you see is as sharp as you can make it. You will then probably



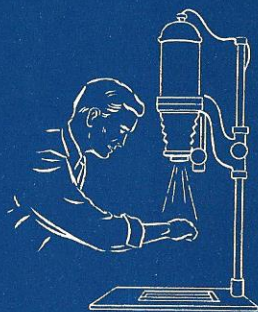
want to adjust the diaphragm opening.

With everything set, turn out the enlarger light, place a sheet of projection paper of the proper contrast grade on your easel. Turn on the enlarger lamp and make the exposure. Subsequent development, fixing and washing are the same as for contact prints.

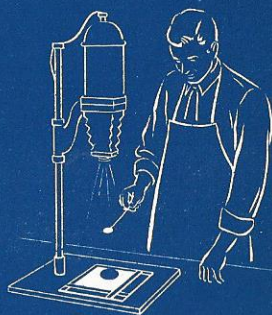
**DODGING** • Many outstanding pictures are created on the easel of the enlarger, for here you have the final control over composition. Here, too, you can control the quality of highlights and shadows by "dodging."

When some part of the picture prints too dark in relation to the other elements it is easy to shade that portion with the hands or with a piece of cotton on the end of a wire during a part of the exposure, as illustrated. Always keep the hands moving slightly so that there will be no visible hard edge in the dodged area. If a part of the negative is so dense that it will not print dark enough with the exposure required for the rest of the negative, the dense section can be given additional exposure either through a gap between your two hands or through a suitable hole cut in a piece of cardboard.

**USING "DEFENDER VARIGAM"** • The handling of "Defender Varigam" Variable Contrast Photographic Paper is exactly the same as that of "Defender Velour Black" or any projection paper except that, because of its sensitivity to a wider range of colors, it *must* be handled under the "Defender" S-55-X Safelight. "Varigam" is made in one grade only. You do not have to keep several grades of paper on your darkroom shelves, yet you will always be ready to print any negative whether it is soft or hard. Instead of selecting



**DODGING  
WITH HANDS**



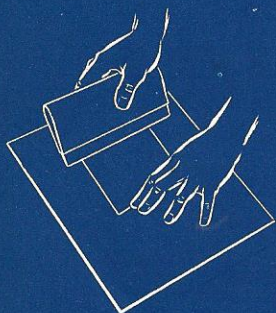
**DODGING WITH  
CARD-BOARD OR  
COTTON ON WIRE**



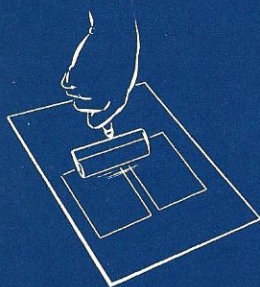
**POSITION OF HANDS  
FOR "BURNING IN"  
IN DODGING**



MATT PRINTS MAY  
BE DRIED  
BETWEEN BLOTTERS



SQUEEGEEING  
PRINT ONTO  
FERROTYPE TIN



ROLLING PRINTS  
ON FERROTYPE TIN

a grade of paper to match your negative, you select a "Varigam" filter and insert it into the "Varigam" Filter Holder which fits over your enlarger lens. A blue filter (No. 10) gives you a normal print from a soft negative, a yellow filter (No. 1) a normal print from a hard or contrasty negative; intermediate filters give normal prints from negatives of intermediate gradation.

**DRYING PRINTS** • After washing the prints, wipe them dry with a wad of absorbent cotton and place them face down on photographic blotters or on cheesecloth mounted on frames.

Prints made on glossy paper should be ferrotyped. You will need ferrotype tins, which are flat metal sheets either lacquered or chromium plated. Place prints face down on the tins and remove excess water with a squeegee or roller, applying considerable pressure.

As the prints dry, they will peel off the tins smoothly, provided that the tins were cleaned and polished carefully before use. The ferrotyping process can be speeded up if the tins are placed under a heat lamp or over a heating register or radiator. Such artificial heat should not be over 120° F. and should not be applied for at least 20 minutes after the prints have been squeegeed or rolled onto the tins. Otherwise, the prints will peel off the tins before they have acquired an even, all-over gloss.

The glossy surface of ferrotype tins should be treated periodically with a solution of 10 grains of paraffin in one ounce of carbon tetrachloride. Simply wipe the solution evenly over the surface of the tin and allow it to dry, then polish the tin with a soft, lintless cloth.



# THE *Chemicals*



Your success in photography is just as dependent upon the chemicals you use as it is upon your film and paper. For this reason it is urged that, at the start, you use prepared photographic formulas rather than mix your own. Later if you wish to mix your own developing formulas for special purposes or to obtain special effects you may do so. For this purpose you will need a darkroom scale which will be sensitive enough to weigh quantities as small as a few grains.

All Du Pont prepared photographic chemicals are laboratory tested to assure uniformity and highest quality results. Developers, fixers, and special preparations are available in ready-to-mix packages requiring only the addition of water. Complete directions for mixing and for their use are printed on each package and when followed will assure you of dependable and uniform results.

Other photographic formulas including those for toners, reducers, and stop baths, are listed in the Du Pont Photographic Papers booklet.

## DEVELOPERS

"Defender" 6-D Fine Grain Borax Formula. 1 qt., 1 gal., 3½ gal. working solution.

53-D All Purpose Developer, for films, papers and plates. In tubes to make 8 oz. of solution; Packages to make 1 qt., 2 qt., 1 gal.

54-D Cold Tone Paper Developer. 1 qt., 2 qt., 1 gal.

55-D Standard Paper Developer. 16 oz. (tubes), 1 qt., 2 qt., 1 gal.

## FIXING BATHS

"Defender" 1-F Acetic Acid Fixer, Super-hardening. 1 qt., 2 qt., 1 gal.

11-F All Purpose Acid Fixing Powder. 2 qt.

# THE *Equipment*

## AND ACCESSORIES

Much of the equipment you will want or need already has been described. However, there are numerous accessories you will probably want to acquire which will add considerably to your enjoyment of this hobby. A few of them are described here.

**DU PONT CELLULOSE SPONGES** • These highly absorbent sponges are useful for removing excess water from films and prints.

**PRINT TONGS** • With them you can handle prints easily without wetting or staining your fingers. They may be obtained in wood, plastic, or rubber-covered metal, and are inexpensive.

**TIMER** • A clock for timing development and exposures of films and papers in the darkroom is desirable. Various models, some of which incorporate audible signals for use in the dark, are available through your photo supply dealer. Most of them can be pre-set for any desired time interval.

**ENLARGER FOOT SWITCH** • This is a useful accessory which permits you to turn your enlarger on and off leaving your hands free for dodging.

**PRINT DRIERS** • Several models are available which incorporate electric heating units and will dry either glossy or matt prints.

**ELECTRONIC TIMERS** • These will turn your enlarger off automatically after any pre-set interval. They are extremely accurate and of considerable use to the photographer who makes many prints.

**RUBBER APRON** • Many of the photographic solutions, particularly developers, will stain. For protection to your clothing, therefore, you probably will want a rubber apron. You will find several styles adapted for darkroom work at your photo dealer's.





## • THE DARKROOM •

As your enthusiasm for the hobby grows you will spend more and more of your time in the darkroom. At first you may be content to do your work in the bathroom or in a corner of the kitchen, but sooner or later you will want to build your own darkroom. On the following pages are several typical layouts, ranging from the very simple to the very elaborate.

Generally speaking, the best place for the amateur darkroom is in the basement, where water and drains are usually accessible. Basements are generally cool in summer and warm in winter and permit easier maintenance of the desirable photographic average of 68° to 72° F.

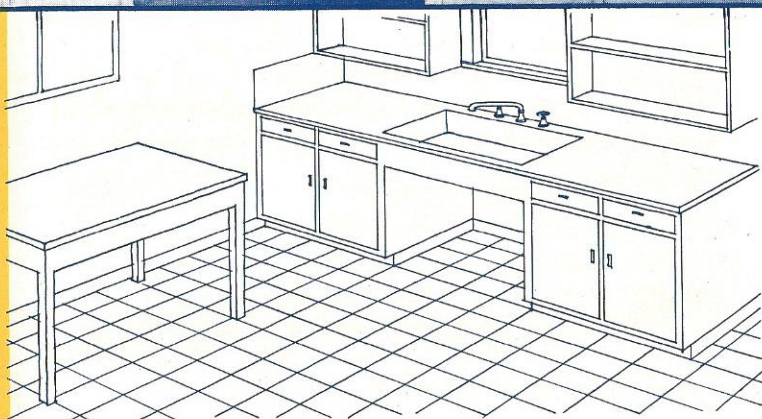
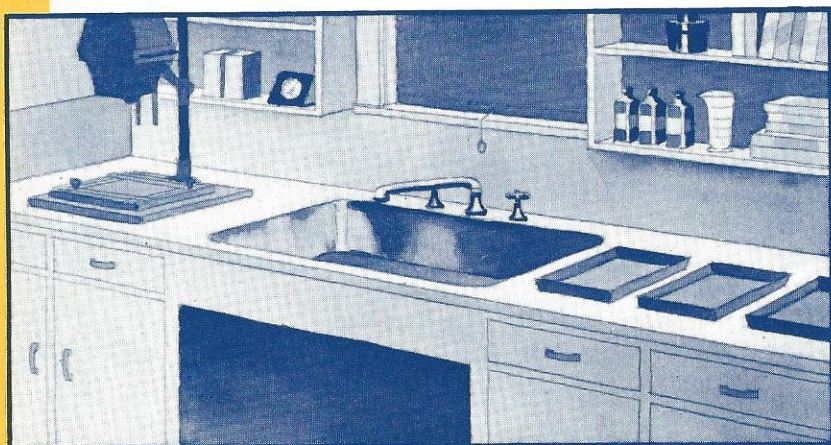
Regardless of the size and location of your darkroom, or the equipment in it, good house-keeping is essential. Dust and spilled chemicals can ruin your negatives.

In your darkroom, today, you can enjoy the results of years of photographic research. You have at hand all of the materials and the equipment that will interpret in artistic terms the world about you as you see it.



## THE *Beginning* . . .

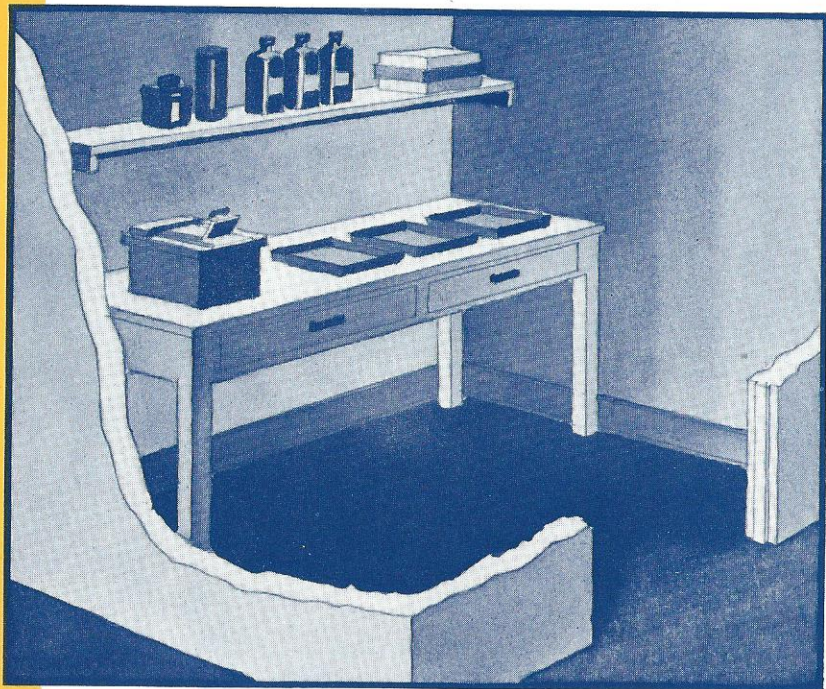
A board across the bathtub, or a sink shelf, can serve as a temporary darkroom. On a kitchen sink with a drainboard on each side, the enlarger or the contact printer may be placed on one drainboard, your trays (with the developer on the outside) lined up on the drainboard, and the tray for the final washing setting in the sink itself. Thus, you process toward the sink where you will wash your prints.





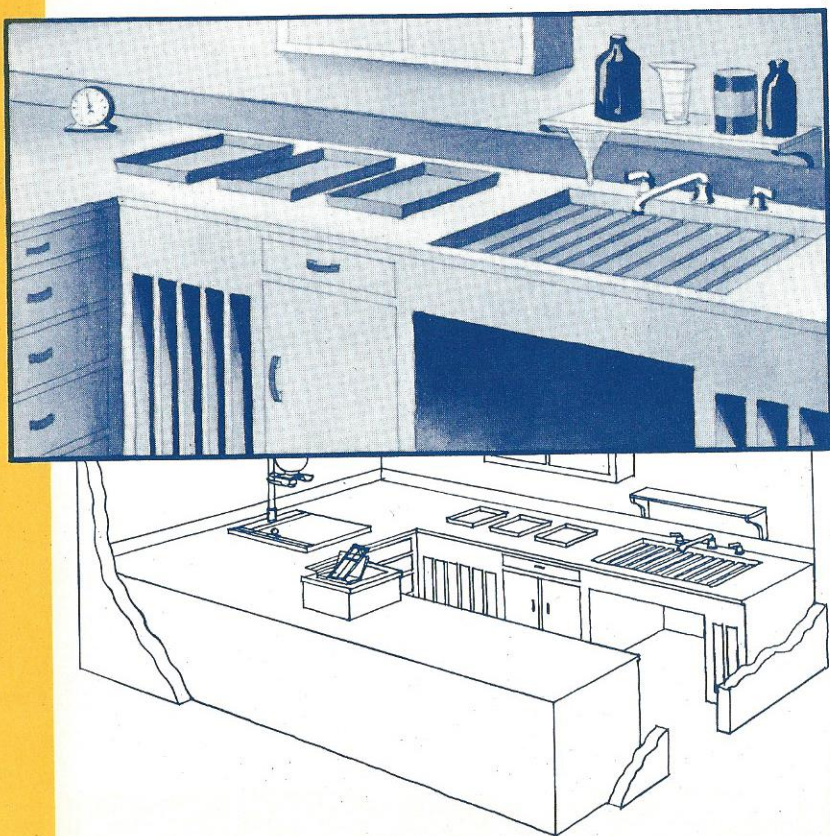
## IT CAN BE *Simple* . . .

Many photo enthusiasts, before making any real expenditure on darkroom construction, start their darkroom work by fitting up one end of a closet as shown here. You will have to adapt it to fit your own requirements, but basically it is nothing more than a shelf and perhaps some storage shelves or drawers built into one end of a closet which can be made light tight. Since there is no water supply here all washing will have to be done outside in the kitchen, bathroom or laundry sink.



## PLANNED FOR *Efficiency...*

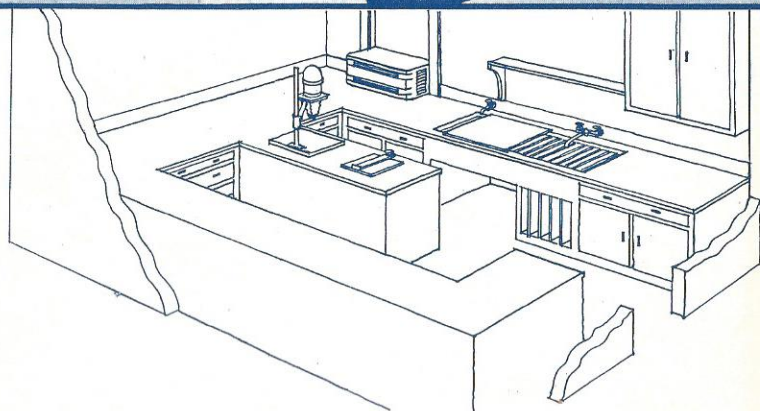
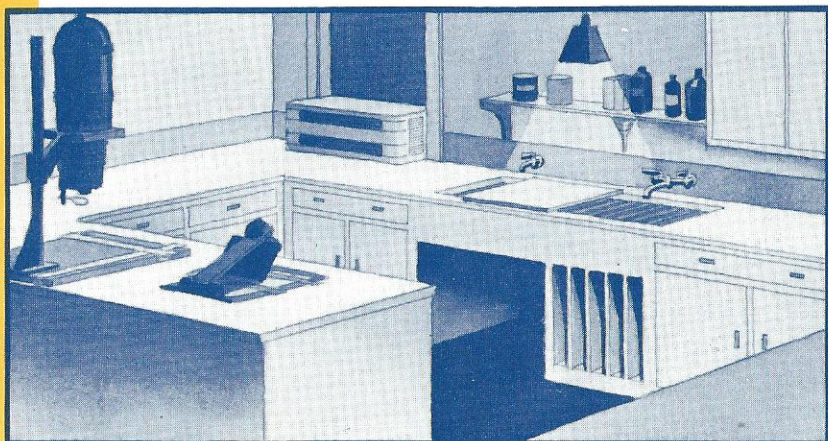
This darkroom plan is typical of thousands of basement darkrooms. It provides great working convenience and ample storage space. If the door is placed at one corner you will probably be able only to have shelves along two sides, but if you follow the suggestion shown here and locate the door in the center of one end you can enjoy the advantages of considerable extra shelf space.





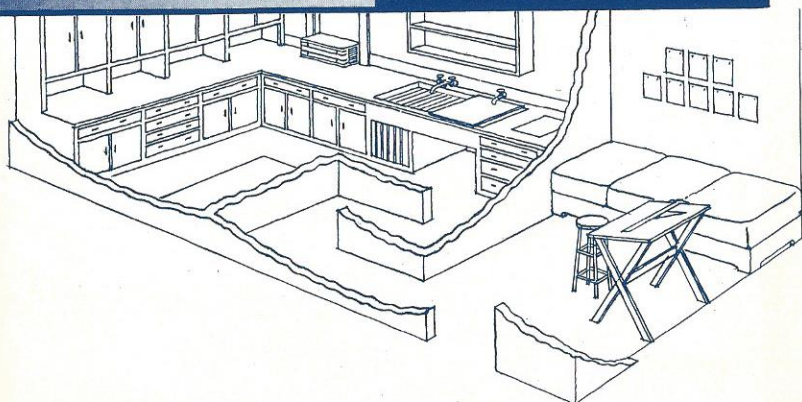
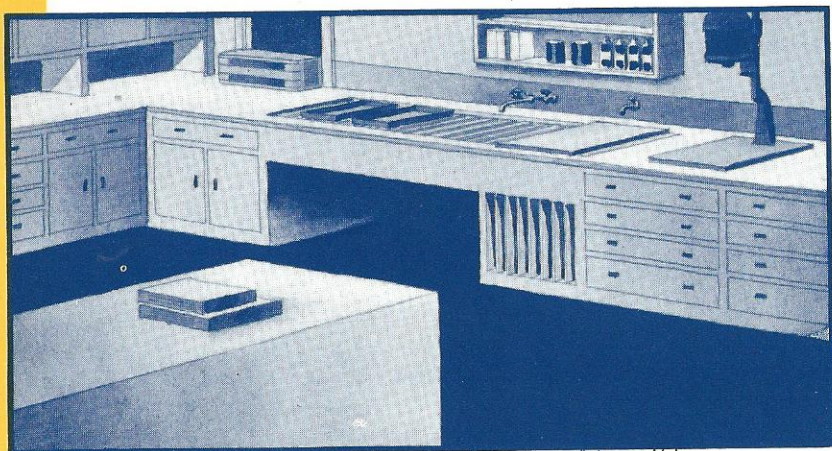
## OR FOR *Comfort...*

Fresh air is a major problem in the darkroom. A well-planned design should allow for good ventilation. Larger and more fully equipped, this plan includes a small air-filtering unit which feeds fresh air into the darkroom and removes stale air. Such units may be mounted over the doorway, in one wall, or used to block up a cellar window. They must be light tight. Your dealer probably has several types adapted for photographic darkrooms.



# *Large...*

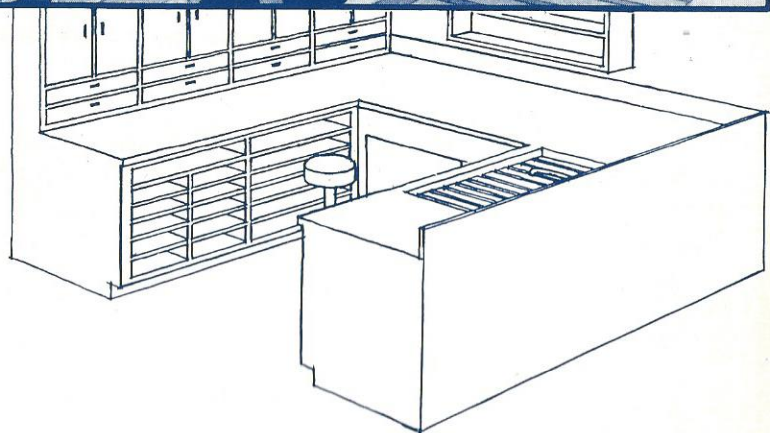
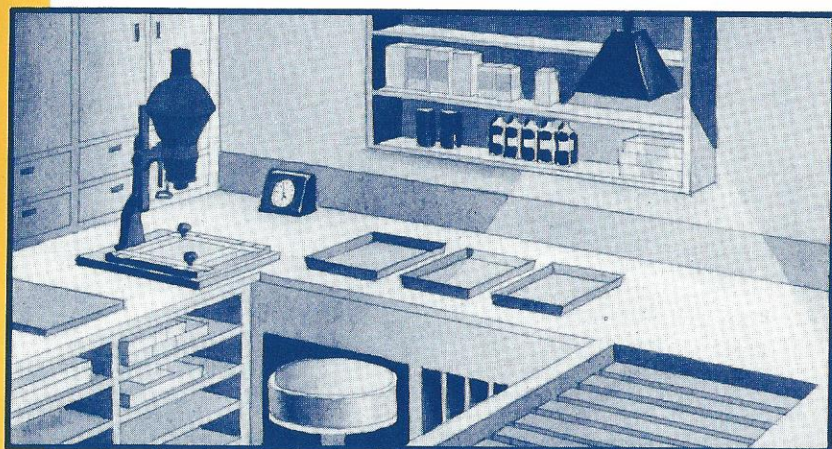
This is the ideal darkroom for the man who makes photography a full time hobby. Containing two rooms, the inner darkroom is reached through a light lock eliminating the need for a door. The darkroom contains all the equipment needed for any photographic process from making color separation negatives to large blow-ups. The outer room contains desk and print display racks. It can be used for entertaining photographically-minded friends.

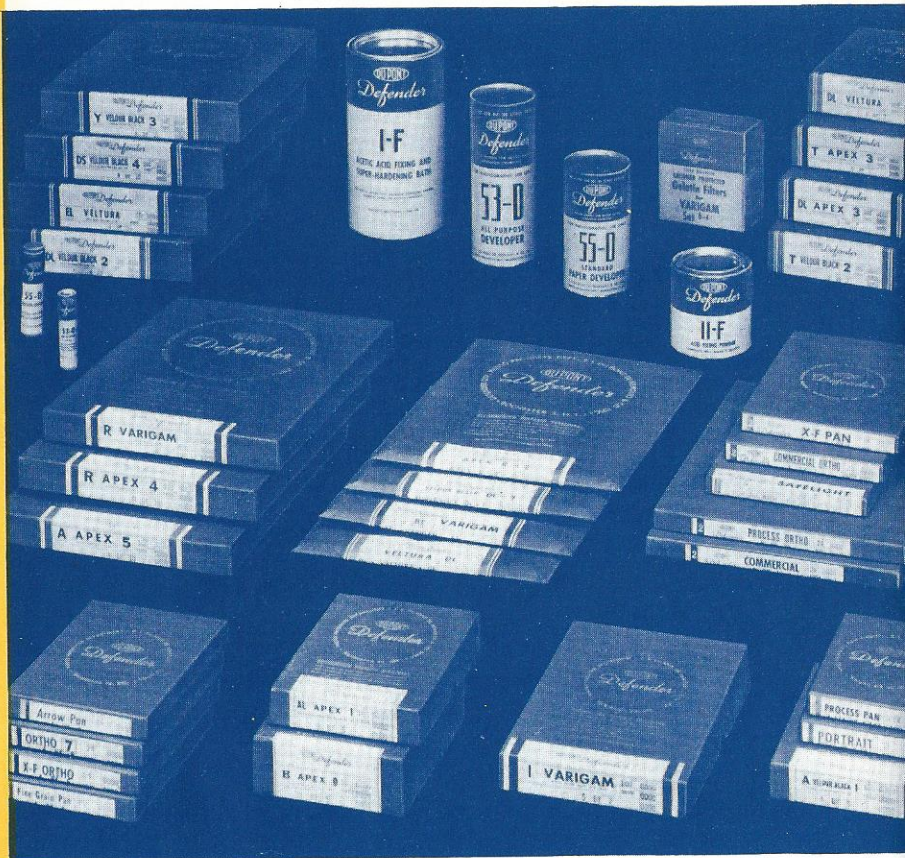




## OR *Small...*

Occupying minimum space, this darkroom is a model in efficiency and comfort. A revolving stool is located in the center with the shelves built around it. Seated here the photographer can put his hand instantly on anything in the room. The equipment is arranged in logical sequence from left to right, starting with the enlarger on the left.





It's easy to recognize "Defender" products on your dealer's shelves by the distinctive blue and yellow package.

"Defender" Chemical Preparations are also packed in key-opening metal containers for your convenience and to keep them fresh and always at their best.

For real darkroom satisfaction make sure you get "Defender" Films, Papers, and Chemicals . . . in the distinctive blue and yellow package.



# SURFACE DESIGNATION CHART

Surface Designation	DESCRIPTION	"APEX"						"VELOUR BLACK"				"VARIGAM"	"VELTURA"	Black and White Proof
		0	1	2	3	4	5	1	2	3	4		2	2 & 3
A	White Semi-Matt, S.W.	•	•	•	•	•	•	•	•	•	•	•		
AL	Single Matt Document, S.W.	•	•	•	•	•	•	•	•	•	•			
AS	White Semi-Glossy, S.W.								•	•				
B	White Semi-Matt, D.W.	•	•	•	•			•	•	•	•			
BB	White Half-Matt, D.W.		•	•										
BT	White Semi-Gloss, D.W.							•	•	•	•	•		
C	White Matt, D.W.							•	•	•	•			
DL	Velvet Grain Natural White Luster, D.W.	•	•	•	•			•	•	•	•	•	•	
DDL	White Rough Luster, D.W.								•					
DM	Velvet Grain Natural White Matt, D.W.								•					
DS	Velvet Grain Natural White High Luster, D.W.		•	•				•	•	•	•			
EL	Velvet Grain Buff Luster, D.W.		•	•					•	•			•	
I	White Rough, Med. Wt.								•	•		•		
N	White Matt, S.W.								•					
QL	Cream Super Rough Luster, D.W.								•					
R	White Glossy, S.W.	•	•	•	•	•	•	•	•	•	•	•		
T	White Glossy, D.W.	•	•	•	•			•	•	•	•			
Y	Cream White Silk, D.W.	•	•	•	•			•	•	•	•			
Z	Canvas								•					
B&W	Medium Rough Luster, Med. Wt.													•



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